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REMARKS BY
NASA ADMINISTRATOR DANIEL S. GOLDIN
TULSA AEROSPACE ALLIANCE
TULSA, OKLAHOMA
OCTOBER 28, 1992

One of the major challenges we face as a society -- certainly in this period of slow economic growth -- is to focus not on the present, but on the future. I believe one of the reasons we're having problems with our economy is that we're not investing in our future to the degree we should.

We see it in government, where our budget is directed more and more toward near-term funding problems. We see it in the corporate world, where they focus on short-term profits, not long-term investment.

We see it in the stock market, too. Last year, the aerospace companies that invested the least in research and development saw their stock prices go up the most. While the rest of the world gears up for the economic competition of the next century, America is chowing down on its seed corn to feed its belly today.

Technology should be the fuel in our economic furnace. Technology creates growth. It creates whole new industries and new jobs -- high paying, high quality jobs that add value to our economy.

NASA's research and development of advanced technology reaches out into the future to bring back opportunities to the world of today. Between 1979 and 1986, the new products generated from NASA science and engineering created over 350,000 new jobs. And believe me, this is a very conservative estimate, because once NASA invents something and makes it available to industry, we often lose track of the many byproducts that build upon our pioneering work.

And while NASA's space activities may get the most media attention, we never forget that the first "A" in NASA is for aeronautics. Our budget for aeronautics research and development grew by 20 percent in 1993, from $555 million to $668 million. This budget will be managed by our new Office of Aeronautics, which we have broken out into its own separate office again to boost its visibility and influence within NASA.

We recognize that aviation is big business in America. Aerospace employs nearly one million Americans in high-tech, value-added jobs. It generated a $29 billion positive trade balance last year.

And of course, it's big business here in Tulsa. With 35,000 people in the area employed by more than 375 aerospace companies, you know more than most people do about the importance of maintaining this industry and shaping it to face the future.

America became the world leader in aeronautics because of a rich history of government research. This year marks the 75th anniversary of Langley Research Center, which became part of NASA in 1958.

It's fair to say that without Langley's pioneering research into the scientific basis of flight, America would not have become the world's aviation leader. Spending hours and days in their wind tunnels, Langley engineers studied wing designs, propulsion systems, even how to break the sound barrier.

Now it's time to break some new barriers. For the 90s, and the new century, NASA has a multifaceted strategy for aeronautics.

First, the basics. We need to upgrade our facilities to world-class standards. That means highly productive wind tunnels that give users fast, accurate, and efficient results. It means supercomputers that can model complex fluid dynamics and airframe stress.

It means virtual reality. Imagine putting on a video helmet and being able to walk around inside a computer-generated wind tunnel while a test is going on, and be able to see the simulated air flow from any angle. All this is possible, and will keep us on the cutting-edge.

The issue of keeping our facilities tops in the world is so important that I recently asked one of NASA's most knowledgeable aeronautics experts, Pete Petersen, former director of Langley Research Center, to undertake a special 15-month study of our national aerospace research facilities. I expect Pete's report to lay the groundwork for a renaissance in the maintenance and operation of our wind tunnels, computer labs and materials-testing machines.

Our second area of work is safety. Crowded skies and crowded airports mean more strenuous efforts must be made to reduce the factors that contribute to human error. As newer planes come on line with highly-automated avionics and warning systems, these glass cockpits can overwhelm pilots with information.

NASA is working on new formats for presenting information to pilots so they feel more in control of their aircraft, such as easy-to-read graphics on computer screens to replace the traditional jumble of needles and dials, and artificial intelligence to diagnose and correct malfunctions.

NASA and the FAA also have a strong ongoing effort to upgrade the software that air traffic controllers use. NASA is currently field-testing a new system in Denver and Dallas/Fort Worth. Since we're not pouring concrete for new airports anymore, advances in air traffic control will be required to allow our airports to safely handle the projected doubling of air passenger traffic that's coming in the next 12 years.

The third major area of NASA's aeronautics strategy is improving the subsonic passenger aircraft that make travel fast, safe, and easy for all of us. Some people may think jets have evolved about as far as they can, but much more can be done to make them more fuel efficient, less noisy, and less polluting. It's a paradox, but it's actually possible to build an engine that puts out more thrust with less fuel, yet is also quieter and cleaner than existing engines. It can be done by using new technology and new materials, such as advanced ceramics and alloys.

NASA is also testing a new technique to reduce drag by drilling microscopic holes in a wing. These holes then are used to draw off some of the air flow pouring over the wing's surface, dramatically reducing the surrounding turbulence. This technique could increase the fuel efficiency of a redesigned jet by 15 percent. Combine this with new quiet fuel-efficient engines and an airframe made out of lightweight composites, and we could be building jets within a decade that are far more economical to operate. That translates into lower ticket prices for you and me.

America used to have 90% of the passenger jet business world-wide. Today, it's 68%, and that doesn't take into account what may happen now that the Japanese and Taiwanese have entered the market.

Tens of thousands of future jobs hang in the balance. America cannot afford to let our aerospace industry go the way of consumer electronics, steel, textiles, and so many other industries that our competitors have taken over after we blazed the trail.

We are strongly committed to maintaining an aggressive program of subsonics research to keep U.S. companies first in aviation. But at the same time, we must place the highest priority on preparing technology for the next leap forward.

We have just begun developing prototype hardware for a supersonic commercial jet that could fly from Los Angeles to Tokyo in a little over four hours. This is less than half the time it takes today. Such a speed would turn a rigorous five-day business trip into a relaxed three-day jaunt.

The market potential for such a plane is outstanding. Transpacific traffic is projected to quadruple in the next 10 years, and transatlantic passenger trips could double. In the period from 2005 to 2015, estimates say that the market could support between 500 and 1000 supersonic passenger jets.

The Concorde is still the slickest commercial plane flying, but its 100-passenger capacity, 3000-mile range, 30-year-old technology and abysmal economic performance make it uncompetitive for the future. It's too small, can't make it across the Pacific, and can't meet noise and emission standards.

In its place, NASA envisions a new craft called the High Speed Civil Transport that can fly at least Mach 2.4, carry 300 passengers, and has a range of 5,800 miles or more. To do this, engines must be created that are capable of supersonic speeds, but still meet the stringent pollution and noise standards going into effect for subsonic aircraft.

Lab and wind tunnel tests over the last few years have determined that lower emissions and engine noise are indeed achievable if this nation continues to invest in the proper combustion technology and new composite and ceramic materials. Just last week I visited NASA's Lewis Research Center in Cleveland and saw some of the work we are doing in this area, and let me tell you, it is unbelievable.

I believe that a High Speed Civil Transport is within our reach for a reasonable investment. When the payoff is a $200 billion swing in U.S. market share and 140,000 new jobs, as one recent industry study projected, we cannot afford anything less than our best effort.

At the same time, we plan to continue research at the farthest edge of the envelope, advanced hypersonics and technology for the proposed National Aerospace Plane. Such a plane could take off from a regular runway, climb through the atmosphere, even as high as the space station, then land again on a runway.

NASA and the Defense Department are making major technological breakthroughs in creating advanced alloys and ceramics for the National Aerospace Plane. Even though we haven't yet decided to build such a plane, the advanced materials technology already produced by the program could increase economic growth by $26 billion over the next 15 years and create 40,000 new jobs throughout the economy, according to one projection.

For example, we came up with a new titanium alloy that's 100 times more resistant to corrosion than standard titanium. This new alloy can be used in oil drilling, airplanes, and even artificial hip joints, and it would reduce the amount of replacement surgery by 30 to 50 percent.

Such a program represents government research at its best: doing the risky, cutting-edge work, then transferring this new knowledge to the private sector for development and production.

And when this technology is ready to be used by the private sector, we want it to be spread farther and wider with every passing year, because all Americans deserve a return on their investment in NASA. As administrator, I am particularly concerned that all segments of the business world have the opportunity to participate.

That is why we have begun several new initiatives to draw more small and disadvantaged businesses into the NASA contractor team.

By 1994, we will be awarding at least 8 percent of our prime and subcontract dollars to 8(a) firms. We're going to consider these firms much more in the early stages of defining our requirements for various programs, and then identify specific opportunities for SDBs in our procurement plans. A NASA Minority Business Resource Advisory Committee is being formed to give us advice on how to broaden our contractor base.

Since more than 60 percent of our work ends up being subcontracted, NASA will be establishing firm percentages within many of our large prime contracts to be subcontracted to SDBs. We then will reward prime contractors with a special incentive fee when they exceed their SDB requirement.

But even when small businesses possess the technological skills to work with NASA, the mountains of paperwork and red tape they have to climb often turn them off at the start. So we have a separate initiative underway to vastly streamline most NASA procurements between $25,000 and $500,000. Starting with small test cases at our several of our field centers, we plan to cut the paperwork for these awards to one-tenth its current volume, while processing the awards in a matter of weeks instead months. There is no rational reason it cannot be done.

These changes, and our renewed focus on aeronautics, not only make good business sense, they reflect a fundamental recognition at NASA that we as an agency exist to offer economic opportunity and inspiration for the future of our country, and the world.

NASA scientist Rick Chappell recently had an experience that illustrates this viewpoint quite clearly. He had been jogging through the wildlife refuge that surrounds the launch pads at Cape Canaveral, when he passed an armadillo by the trail. Later, he looked up and saw an eagle.

He said, "I was struck by the contrast of their different approaches to life. Where the armadillo never looks up -- concentrating only on its next meal, and oblivious to the world around it -- the eagle soars quietly and majestically. It is not rooting around the ground, but is striving for the high ground -- seeking a vantage point from which to see the horizon and beyond."

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This nation has always had the power to be anything we chose to be. All it takes is the will to do it. Today's NASA has the will, and we are committed to leading the way. Thank you.

TULSA AEROSPACE ALLIANCE
TULSA, OKLA.
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I believe one of the reasons we're having problems with our economy is that we're not investing in our future to the degree we should.

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The National Research Council recently urged NASA to make subsonic aircraft technology our top priority, ahead of high-speed vehicles and short-haul airplanes. We agree that we need a better balance among these areas. But I ask you to consider some facts about the current commercial marketplace and where the biggest potential payoff for the future might be.

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But at the same time, we must place the highest priority on preparing ~~the~~ technology for the next leap forward.

Instead, what if we ~~leapfrogged~~ over our international competition? ~~What if we started today on~~ developing prototype hardware for a supersonic commercial jet that could fly from Los Angeles to Tokyo in a ~~little over~~ four hours? This is less than half the time it takes today. Such a speed would turn a rigorous five-day business trip into a relaxed three-day jaunt.

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